

भारतीय मानक

IS 4145 : 2023

Indian Standard

वस्त्रादि — रस्सियों का भंडारण — रीति
संहिता

(दूसरा पुनरीक्षण)

**Textiles — Storage of Ropes — Code
of Practice**

(*Second Revision*)

ICS 59.080.50

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Price Group 4

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards after the draft was finalized by the Cordage Sectional Committee and approved by the Textiles Division Council.

Ropes made from both natural and synthetic fibres are liable to be weakened to some extent even under the best storage conditions. Under the optimal conditions of a cool and dry environment, the rate of deterioration will be relatively slow and in an excessively damp or warm environment, the same will be accelerated, since dampness encourages deterioration by microbial action while the warm air results in gradual oxidation or hydrolysis of the fibre. Exposure to light will darken the cordage and possibly accelerate the rate of deterioration. Some of the man-made fibres such as polyamide, polyester and polyethylene are inherently resistant to microbial attack.

In cases where it is observed that the inner centre yarns of a particular strand are frayed or partially broken, this condition should be considered as an indication that the rope has been over loaded short of breaking point and such ropes should not be stored any more.

This Indian Standard was first published in 1967 and subsequently revised in 1987. This revision has been made in the light of experience gained since its publication and to incorporate the latest good practices used for storage and updating of the references to Indian standards.

The composition of the committee responsible for the formulation of this standard is listed in Annex A.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’.

Indian Standard

TEXTILES — STORAGE OF ROPES — CODE OF PRACTICE

(*Second Revision*)

1 SCOPE

1.1 This standard prescribes the code for storage of synthetic and natural fibre ropes.

1.1.1 It prescribes certain optimal conditions for storage of ropes which would retard the rate of storage deterioration to a negligible extent.

2 REFERENCE

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below:

<i>IS No.</i>	<i>Title</i>
IS 401 : 2001	Preservation of timber — Code of practice (<i>fourth revision</i>)

3 STORE ROOM

3.1 The store room structure shall be located on a raised, well-drained site not liable to flooding or inundations.

3.2 Rain water pipes shall be provided at every alternate bay for drainage of rain water from the roof. The lower end of the drain pipe shall be 15 cm above the ground level and shall be provided with shoes and suitable provisions for drainage of rain water.

3.3 The store room shall be situated at such a place where there is no danger of noxious fumes (such as, of acids or other deleterious chemicals) coming in contact with ropes.

3.4 The store room shall be well ventilated and shall not have any stagnant air pockets. Stagnant air pockets may be avoided by providing electrical air circulation and exhaust arrangement. In case some stagnant air pockets in the store room cannot be eliminated, these shall be avoided for storing ropes.

3.5 The roofing of the store room may be of RCC or asbestos sheets but corrugated iron sheets shall not be used for roofing.

3.6 Brick work is suitable for the construction of walls.

3.7 The floor of the store room should preferably be damp-proofed.

3.8 The store room structure and the electrical wiring shall satisfy the regulations of fire-fighting and the fire insurance authorities.

3.9 As far as possible, the store room shall be kept reasonably cool and dry. This is particularly important in the case of ropes made from natural fibres.

NOTE — Temperature from 20 °C to 30 °C and relative humidity from 45 percent to 70 percent are considered suitable for store room conditions.

4 STORAGE CONDITIONS

4.1 Care shall be taken to make sure that the wooden platforms, racks or gratings do not breed organism which would affect the ropes. The legs of the platforms, racks or gratings should be given suitable anti-termite treatment (*see IS 401*) from time to time.

4.2 The ropes shall be stacked in a pyramidal way so that air freely circulates around them.

4.3 Minimum allowable clearance shall be as follows:

<i>Between</i>	<i>Clearance, m</i>
Rope stack and wall	0.5
Adjacent stacks	1.0
Top of the stacks and ceiling	1.0

4.4 The rope coils shall be turned around from time to time.

4.5 Wet or damped rope shall not be stored. It shall first be completely dried in shade in the ambient atmosphere and then stored as ropes made from natural fibres are susceptible to mildew rot.

NOTE — Drying the rope by heating or in direct sunlight renders the fibres brittle in a few hours making it unfit for service.

4.6 Direct sunlight shall not be allowed to fall on the stored ropes. In the case of man-made filament ropes, strong sunlight may cause weakening of the rope filaments. So, care should be taken to avoid ropes from exposure to sunlight. Ultra-violet rays are more intense at high altitudes. Since ultra-violet ray is the greatest single factor responsible for weathering, special care should be taken to prevent unnecessary exposure of mountaineering ropes to sun at high altitudes.

4.7 If the rope is to be stored on open deck on board the ship the coils shall be stacked on wooden grating in such a way that air freely circulates around them. The stacks of coils shall be covered with canvas or other suitable material for protecting them from deleterious effect of sun and wind.

NOTE —The drying of rope is usually done on board the ship, on simple reels fitted on a bulkhead or to a deckhead. The drum and the flanges of the reel are of skeleton frame work to allow air to circulate around the coil and thus keep it dry. Both ends of the rope are kept stopped by their brackets to frame work of the flange. The reel is secured by a lanyard, fitted on the flange to prevent it from rotating when the rope is dried.

4.8 If rope is to be stored under deck on board the ship, it shall be allowed to dry up completely before coiling (*see 4.5*). The dried rope shall be coiled and stacked on wooden gratings in such a way that air freely circulates around them.

5 PERIODIC INSPECTIONS

5.1 The coils of ropes in a store shall be examined periodically, to make certain that there is no undue deterioration, by the methods prescribed in **5.1.1** and **5.1.2**.

5.1.1 Take the coil and untwist it to loose open the strands at several places along its length. Examine the inside yarns of the strand for the following indications of deterioration:

- a) Blackish-brown, yellow or red coloured growth due to chemical or microbiological deterioration between the strands or within the strands;
- b) Sour or musty odour;
- c) Powdering in the strands or within the strands; and
- d) Inner centre yarns of a particular strand are frayed or partially broken.

5.1.2 Untwist about 15 cm of rope. From one of its strands take out a few yarns. Hold them with both hands and apply force by pulling apart. The deteriorated yarn will break with little force. In case of complete deterioration, merely striking a bent strand will break it. The tendering may also be measured by tensile strength test.

5.2 Ropes found to be deteriorated as in **5.1.1** and **5.1.2** shall be declared unfit for use and shall not be stored further.

ANNEX A

(Foreword)

COMMITTEE COMPOSITION

Cordage Sectional Committee, TXD 09

<i>Organization</i>	<i>Representative(s)</i>
Indian Institute of Technology Delhi	DR (PROF) R. CHATTOPADHYAY (Chairperson)
Association of Synthetic Fibre Industries, New Delhi	DR M. S. VERMA
Azuka Synthetics LLP, Panchkula	SHRI SUSHANT GUPTA SHRI DEVRAJ THAKUR (<i>Alternate</i>)
Central Coir Research Institute, Kochi	SHRIMATI SUMI SEBASTIAN DR ANITA JACOB (<i>Alternate</i>)
Central Ordnance Depot, Kanpur	REPRESENTATIVE
Chhotanagpur Rope Works Private Limited, Ranchi	SHRI SIDDHARTH JHAWAR SHRI ANURAG JHAWAR (<i>Alternate</i>)
Coast Guard Headquarters, New Delhi	CMDT NUPUR KULSHRESTHA SHRI D. D. SHARMA (<i>Alternate</i>)
Crown Industries, Kolkata	SHRI SANJEEV AGARWAL SHRI GH BHUNIA (<i>Alternate</i>)
Delta Ropes Manufacturing Company, Kolkata	SHRI ANAND MAJARIA SHRI AAYUSH MAJARIA (<i>Alternate</i>)
Directorate of Quality Assurance (DGQA) (Naval), Delhi	CAPT A. K. SHARMA SHRI G. S. N. MURTHY (<i>Alternate</i>)
Directorate of Quality Assurance (DGQA), New Delhi	SHRI K. I. SINGH
Garware Technical Fibres Limited, Pune	SHRI KISHOR J. DARDA SHRI SATISH J. CHITNIS (<i>Alternate</i>)
Indian Jute Industries Research Association, Kolkata	MS SOUMIATA CHOWDHURY SHRI PARTH SANYAL (<i>Alternate</i>)
Indian Jute Mills Association, Kolkata	SHRI SAMIR KUMAR CHANDRA SHRI BHUDIPTA SAHA (<i>Alternate</i>)
Jayshree Fibre Products Limited, Kolkata	SHRI N. K. SOMANI SHRI MANOJ BIYANI (<i>Alternate</i>)
Kohinoor Ropes Private Limited, Aurangabad	SHRI VINAY CHANDAK SHRI SUNIL BIHANI (<i>Alternate</i>)
National Institute of Natural Fibre Engineering and Technology (ICAR-NINFET), Kolkata	SHRI SURAJIT SENGUPTA SHRI KARTICK SAMANTA (<i>Alternate</i>)
Office of the Jute Commissioner, Kolkata	SHRI SOUMYADIPTA DATTA SHRI P. K. BISWAS (<i>Alternate</i>)
Office of the Textile Commissioner, Mumbai	SHRI N. K. SINGH SHRI HUMAYUN K. (<i>Alternate</i>)

<i>Organization</i>	<i>Representative(s)</i>
Oil and Natural Gas Commission (ONGC), Mumbai	REPRESENTATIVE
Oil India Limited (OIL), Assam	REPRESENTATIVE
Protherm Engineering Private Limited, Faridabad	SHRI RATNESH DEWAN SHRI SANJEEV KUMAR SHARMA (<i>Alternate</i>)
Reliance Industries Limited, Mumbai	SHRI RAJIV GUPTA SHRI KESHAV PAREEK (<i>Alternate</i>)
Shipping Corporation of India Limited, Mumbai	CAPT YOGESH PURI
Thanawala and Company, Mumbai	SHRI HEMAL M. THANAWALA SHRI VIVAAN THANAWALA (<i>Alternate</i>)
Tufropes Private Limited, Silvassa	SHRI ANURAG SARIN SHRI SHASHI BHUSHAN NEGI (<i>Alternate</i>)
BIS Directorate General	SHRI J. K. GUPTA, SCIENTIST 'E'/DIRECTOR AND HEAD (TEXTILES) [REPRESENTING DIRECTOR GENERAL (<i>Ex-officio</i>)]

Member Secretary
SHRI ASHWANI KUMAR
SCIENTIST 'B'/ASSISTANT DIRECTOR
(TEXTILES), BIS

Bureau of Indian Standards

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Amendments Issued Since Publication

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